construction is so simple that if accidentally broken any watchmaker can repair it. The smoked paper on which the pulse is recorded runs through the instrument in ten seconds, so that the number of the beats per minute can be reckoned by multiplying the pulse-tracings on the paper by six. The patient's name, the date, the disease, the pressure of the spring, and some conventional sign to indicate his position when the tracing was made, may be written on the marked paper with any sharp-pointed instrument, such as a pin or a toothpick, and the whole permanently fixed by dipping the paper in some quickly-drying varnish, such as is used by photographers. In this way a series of pulse-tracings taken during the course of the disease may be preserved for future study and comparison.

Dr. Dudgeon's pocket sphygmograph is manufactured by Mr. John Ganter, 19, Crawford Street, W. The woodcut represents its actual size.

NOTES

We understand that the fifth volume of the Catalogue of Birds in the British Museum will shortly be published. According to the classification followed in this work the families to be described will be the Thrushes and Warblers, and the volume will be written by Mr. Henry Seebohm, whose co-operation Dr. Günther has been fortunate in obtaining. Mr. Seebohm has devoted a close study of several years to these families of birds, and may now be considered the best living authority on the subject.

M. Flammarion, the author of several works in popular astronomy, has been made a Knight of the Légion d'Honneur. Admiral Mouchez, director of the Paris Observatory, has consented to act as his *parrain*, and to hand over to him the star and ribbon. This liberal determination has created some sensation in the French astronomical world. The work of transformation of the Observatory will begin very shortly, all the legal difficulties having been solved. The area of the establishment is now 30,000 square metres. The magnetical instruments will be placed in the deep trenches separating the old ground from the newly annexed buildings.

We regret to have to announce the death of M. Eugène Cortambert, author of a number of geographical works, honorary president of the Geographical Society of Paris, and head of the geographical department in the National Library.

About a year ago Admiral Mouchez asked for a credit of 4000 francs per year in order to publish a monthly astronomical review. M. Jules Ferry refused the grant, but a similar review is now being published at Brussels under the name *Ciel et Terre*. It appears twice a month, and is devoted to meteorology and astronomy.

Although our Government has declared the interest which it takes in the forthcoming International Exhibition of Electricity at Paris, still it sees no necessity for appointing a Special Commissioner to take measures with regard to the participation of British subjects in the Exhibition which is to open in Paris on August 1 next in the Champs Elysées Palace. The French Government is nevertheless disposed to welcome all British subjects wishing to participate in the Exhibition. M. Berger, the Commissaire-Général, has placed himself unreservedly at the disposal of intending exhibitors to afford every information and assistance. He would be thankful if they would fill up and return to his address the printed form of demand of admission which accompanies the copy of the general regulations. English exhibitors will be placed in every respect on the same footing as French exhibitors. M. Berger will form a special section for the group of English exhibitors, and requests that all demands be forwarded within the briefest delay possible. The Exhibition rooms and dependencies will be considered as real Custom-house stores, so that all the articles sent there shall be exempt from the duties to which they would otherwise have been liable. The French railway companies have consented to an abatement of 50 per cent. on the ordinary rates of transport, whether by fast or by slow trains, for all packages or boxes forwarded to the Exhibition Hall, and bearing the official labels. The Postmaster-General has been authorised by the British Government to exhibit in the name of the latter.

A committee has been formed at Dijon for erecting a statue to Carnot, the celebrated French geometer and politician, who was born in Nolay, a small country town of Burgundy, in 1753. The youngest son of Carnot is now living, one of the members of Senate, and his grandson is M. Sadi Carnot, the present Minister of Public Works. The other son of Carnot died fifty years ago, after having written a small essay, "Sur la Puissance motive du feu." M. Carnot's brother has just published a new edition of this work, with a number of essays, mostly unpublished, by the same author, and a history of his life.

At the conclusion of the proceedings of the Quekett Microscopical Club on February 25 occasion was taken to present to Mr. J. E. Ingpen a memorial of the esteem in which he is held and the appreciation of his services as honorary secretary for the last eight years. After an able address by Dr. Matthews, setting forth the reasons which had led to this movement on the part of the members, and short speeches by Dr. Cobbold, Mr. Crisp, and Mr. Michael, Mr. T. C. White handed to Mr. Ingpen a beautifully illuminated and framed memorial, together with a valuable microscope by Zeiss and a handsome silver tea-service, which were accepted and acknowledged amidst hearty demonstrations of good feeling on the part of the meeting. The attendance of members was unusually large, and in the course of the evening telegrams were received from Dr. M. C. Cooke and Mr. Henry Lee, expressing their regret at unavoidable absence.

At the ordinary meeting of the Meteorological Society, to be held at 25 Great George Street, Westminster, on Wednesday, the 16th inst., at 7 p.m., there will be an exhibition of instruments, consisting of various kinds of hygrometers and of such new instruments as have been brought out since January 1, 1880. During the evening the President will give a historical sketch of the different classes of hygrometers, and will also describe such forms as are exhibited.

The town of Casamicciola, in the Island of Ischia, has been almost entirely destroyed by an earthquake. More than 200 houses have been thrown down, and many others are so much damaged as to be uninhabitable. The number of persons thus far ascertained to have been killed is 104, and very many more have been injured. The total number of victims is estimated at 300. This dreadful catastrophe was the result of two shocks—the first at half-past one in the afternoon of the 4th inst., lasting seven seconds; the second after an interval of an hour and a half. The whole upper part of the town has been destroyed. The handsome Albergo della Grande Sentinella is a mass of ruins. Clefts and fissures opened in the streets 50 centimetres in width. It was at first supposed that this disaster was connected with the partial eruption of Vesuvius on the 3rd inst., but Prof. Palmieri has stated that the seismographic instruments having given no indications, he is inclined to think the catastrophe is due to some local phenomenon, possibly to a sudden sinking of the ground through subterranean corrosion caused by the continual working of the mineral waters. Shortly before the first shock of earthquake the mineral springs were observed to be in a state of ebullition. Another shock was felt at midnight.

Shocks of earthquake occurred at St. Ivan-Zelina (Hungary) on February 26 at 3h. 54m., in the night of February 26-27 at

12h. 30m., and on February 27 at 5h. 28m. a.m. At Agram a rather severe shock was felt on February 25 at 3h. 45m., duration two seconds, direction west-south-west; and another at noon of March 4. Earthquakes are also reported from Kirchberg (Austria), on February 28, at 2h. 20m. a.m., duration two seconds, and from different parts of Switzerland on March 3, *e.g.* Zürich and its environs, at 3h. 35m. a.m.; Aussersiehl, at 3h. 42m., direction west to east, duration two seconds; Riesbach, Selnau, Knonau, Aaran, Zofingen, Hunzenschwyl, Rapperschwyl, Glarus, Zug, Berne. The earthquake shock felt at Berne on Thursday morning last shortly after three o'clock was a very smart one. The area of disturbance was wide, extending as far as the Lakes of Geneva and Bienne.

Mr. H. J. Johnson-Lavis writes to us from Naples, under date March 2:—Vesuvius has to-day been covered with snow, and this evening, during a short interval between the mantling of clouds, a splendid stream of lava is pouring down the northern side and has reached the Atrio del Cavallo. The stream is very liquid and very abundant, and from this it may be concluded that its course will be progressive.

M. Jules Ferry has established a number of colleges for females in several parts of France; some of them have been already opened.

The authorities of the British Museum will very soon issue their scheme for publishing the great catalogue of printed books. The projected issue, at the rate of five volumes a year, is not expected to be completed in less than forty years. The work, however, can of course proceed no faster than the Government grant of 1600*l*. a year for this special purpose will permit. Altogether the catalogue is likely to comprise about 3,000,000 titles, which to put in type will cost from 4*d*. to 6*d*. each. It has already been announced that the publication will commence with volumes specially devoted to certain subjects, or rather sub-headings, which have now become too voluminous for convenient handling in their present form. Meanwhile the Trustees have adopted the plan of printing and publishing the titles of all additions to the library. It may be interesting to know that in this case all titles are stereotyped on separate "plaques," and are therefore susceptible of any amount of re-arrangement.

An important experiment in electric lighting is about to be made in the City. Hitherto the electric light has been used, as on the Thames Embankment and Waterloo Bridge, in conjunction with gas; but in the City the thoroughfares selected are to be lighted by electricity alone, which will be continued all night. The first district begins with Blackfriars Bridge, and extends along Bridge Street, Ludgate Hill, the north side of St. Paul's Churchyard, and down Cheapside as far as King Street. The distance is 1648 yards, and is to be lighted by the Brush system. At King Street the Siemens system will begin, and will extend along the rest of Cheapside, the Poultry, Mansion House Street, King William Street, and Adelaide Place, and across London Bridge. The same system will be extended down King Street, Queen Street, and Mansion House Street. The whole length of street covered by the Siemens light will be 1521 yards. Another district to the south of these will be lighted by the Jablochkoff lamps, like the Embankment. It will include Southwark Bridge, Queen Victoria Street, Queen Street Place, and part of Queen Street, a distance of 1703 yards. The experiment is to be continued for a year, at an outlay of about 8000*l*.

Prof. Blackie being unable to lecture through illness, Mr. Shelford Bidwell, M.A., LL.B., will give a discourse on Selenium and its Applications to the Photophone and Telephotography, at the Royal Institution, on Friday evening next March 11), at 9 p.m.

The Calendar of the Mason Science College, Birmingham, is a volume of respectable size, but then it contains a full report of proceedings and addresses at the opening meeting. We are glad to see that a large number of new chairs are about to be added, including Greek, Latin, and modern languages; so that the College will shortly be as well equipped as that at Manchester. As the curriculum is being extended to include really literature, science, and art, might it not be well to drop the "science" from its designation? it looks so one-sided.

The *Proceedings* of the last Congress of Russian Naturalists, which was held at St. Petersburg, have just appeared as a separate bulky volume.

A paper has been published by Gustav Hauser of Erlangen, on the organs of smell in insects, in which he describes several experiments. Numerous species of insects, on approaching vessels containing turpentine or acetic acid, showed—by retreating and moving their antennæ—a distinct perception of the smell. After the ends of the antennæ had been cut off, the same insects placed close to the vessels appeared quite insensible to it. A number of flies, which had been attracted by a piece of putrid meat, showed no inclination to approach it after the third segment of the antennæ had been cut off.

We have received a pleasant report of the Queenwood College Mutual Improvement Society for the year ending Christmas, 1880. The Society seems to have a comprehensive programme.

Under the title of the *Northern Microscopist*, and under the editorship of George E. Davis, a monthly periodical has been started, beginning with January of this year, the chief aim of which is to keep a record of the proceedings of the chief microscopical societies in the North of England, and thereby to furnish each individual member of these societies with as much permanent information as such members would obtain if the society to which they belonged published its own Transactions. There ought to be abundant support for a little journal like this, and numerous subscribers ought to be obtained from large centres like Liverpool, Leeds, Chester, Bolton, Manchester, Nottingham, Newcastle-on-Tyne, and the like. If the various Northern societies were to do nothing more than prepare local lists of all the varied species of animal and vegetable life, which come under the well-known denomination of "microscopical forms," and if this journal were to be the medium of publishing these, it would become a journal of importance, one that would be constantly referred to; and it would in the meantime be doing a good work in advancing the study of the biological sciences. We wish it every success, and trust that it will steadily pursue the path that it has marked out for itself.

A stenographic piano has been experimented on by the daughter of the inventor, in the French Chamber of Deputies, the Senate, and to the Municipal Council of Paris, with great success. The system consists of a combination of signs through which every sound is represented. The reproduction is as rapid as speaking, and the same operator can continue the work for hours. The signs used in this system being printed by machinery, the reading is immediate, and can be made by other people than the operator. The State stenographers propose to be trained in the use of the instrument. It is an affair of a few months of practice.

A scientific society has been formed at Scarborough, called "Scarborough Scientific Society and Field Naturalists' Club." President-elect, Mr. J. Woodall, M.A.; Secretary, Mr. G. Massee.

The excavations in the 9th region of Pompeii are being prosecuted with alacrity, and yield unexpected results. Besides a second mosaic fountain and valuable frescoes recently found, there were excavated the other day some vases of Egyptian manufacture, which will greatly interest archæologists. They are made of a particular kind of paste, composed of white clay and glass, and are extremely brittle. All round they have high relief representations of the animals worshipped by the ancient Egyptians.

A PHONOGRAPH of a new construction will be tried in the New Polyglot Institute of Paris, for the purpose of teaching pupils the art of pronouncing correctly the difficult words of foreign languages.

A SCHOOL for clockmakers has been organised in Paris, and was inaugurated yesterday by a meeting at the Conservatoire des Arts et Métiers.

THE new part of the *Transactions* of the Asiatic Society of Japan contains a paper by Dr. Edkins on the influence of Chinese dialects on the Japanese pronunciation of the Chinese part of the Japanese language.

WE have received part 3 of the *Transactions* of the Epping Forest Club, containing the address of the president, Mr. Meldola, proceedings, and list of members.

WE have to acknowledge the receipt of a postal order for 2*s*. 6*d*. from "Bullphumpus" for the John Duncan Fund.

THE additions to the Zoological Society's Gardens during the past week include an Indian Leopard (*Felis pardus*) from India, presented by the Duke of Buckingham and Chandos; an Entellus Monkey (*Semnopithecus entellus*) from India, a Greater Sulphur-crested Cockatoo (*Cacatua galerita*) from Australia, a Blue-fronted Amazon (*Chrysotis festiva*) from Brazil, deposited; four Indian Rat Snakes (*Ptyas mucosa*) from India, a Matamata Terrapin (*Chelys matamata*) from Upper Amazons, purchased; two Calandra Larks (*Melanocorypha calandra*), European, a Chinese Quail (*Coturnix chinensis*) from China, two Fire-tailed Finches (*Erythrura prasina*) from Java, received from Paris.

OUR ASTRONOMICAL COLUMN

THE SOLAR PARALLAX.—M. Faye has just communicated to the Academy of Sciences a paper on the actual state of our knowledge of the sun's parallax, of which we subjoin some particulars, without professing to regard his mean result as necessarily so definitive as he appears to view it himself.

M. Faye considers that there is no other scientific constant, the determination of which depends on an equal number of results completely independent of one another, and obtained by methods so totally different, and subdivides the various values assigned for the sun's mean parallax as follows:—

Geometrical methods, 8″·82	8″·85	by Mars (Cassini's method) ...	Newcomb.
	8·79	by Venus, 1769 (Halley's method)	Powalky.
	8·81	by Venus, 1874 ,, ,,	Tupman.
	8·87	by Flora (Galle's method)	Galle.
	8·79	by Juno ,, ,, ...	Lindsay.
Mechanical methods, 8″·83	8·81	by the lunar inequality (Laplace's method)	—
	8·85	by the monthly equation of the earth	Leverrier.
	8·83	by the perturbations of Venus and Mars	Leverrier.
Physical methods, 8″·81	8·799	Velocity of light (Fizeau's method)	Cornu.
	8·813	Velocity of light (Foucault's method)	Michelson.

With regard to the first value by "mechanical methods," M. Faye mentions that he has obtained it by adopting for the coefficient of the inequality 125″·2, the mean between the results of Sir George Airy from the Greenwich observations, and that of Prof. Newcomb, from the observations made at Washington, taking for the moon's mean parallax, 57′ 2″·7, and for her mass $\frac{1}{80\cdot8}$. Leverrier found the value 8″·95 from the said equation, which was reduced after correction by Mr. Stone for two small errors to 8″·85. The value from the perturbations of Venus and Mars assigned by Leverrier was 8″·86, but one of the numbers requiring a small correction, it is reduced to 8″·83. Michelson, after bringing to bear upon Foucault's method improvements which M. Faye says completely surmounted all difficulties, found for the velocity of light 299940 km., while Helmert altered Cornu's result to 299990 km. With Struve's constant of aberration the corresponding values for the solar parallax are 8″·799 and 8″·813, as above.

The general mean in which it may be considered that the errors of the individual results, obtained by so many methods, are to a great extent compensated is 8″·82, and to this value M. Faye, for reasons given, attributes a probable error of ± 0″·016. The mean value by the physical methods is 8″·806, and by astronomical methods 8″·825. He then considers which of these values is the more reliable, and states that he does not hesitate in giving the preference to the physical result, and arrives at the conclusions:—

1. That the method of the physicists is superior to all others, and ought to be substituted.

2. That the value of solar parallax, 8″·813 (by physical methods), is now determined to about $\frac{1}{100}$ of a second.

3. That the seven astronomical methods of procedure converge more and more towards that value, and tend to confirm it without equalling it in precision.

M. Faye adds that he has no idea of attempting to diminish the importance of the observation of the approaching transit of Venus: but as Leverrier pointed out, "il faut que les efforts des astronomes aient pour but d'obtenir une précision toute nouvelle dans leur prochaines expéditions." Without neglecting the contacts, he considers it will be desirable to employ to a greater extent than was done in 1874 "les procédés si puissants de la photographie," to which, be it observed, M. Faye from his own experiences drew attention a quarter of a century back. He thinks it will be very surprising if that admirable method of procedure, which has already succeeded so well in measuring delicate stellar groups, should fail for the transit of Venus, or under circumstances more favourable for its application. The value 8″·813 for the sun's parallax, which appears to him definitive, is in accordance with that adopted by Laplace in the *Mécanique céleste*, 27·2 centesimal seconds or 8″·812.

SWIFT'S COMET, 1880 *e*.—Mr. Winslow Upton of the Naval Observatory at Washington, sends us elements of this comet, which, as he remarks, afford a further confirmation of the 5½-years' period already assumed. He employed two observations made with the meridian circle of the Washington Observatory on October 25 and November 23, and one with the 26-inch equatorial on December 22. The elements are as follow:—

Epoch 1880, October 25·5 M.T. at Washington.

	°	′	″	
Mean anomaly	357	48	49·3	
Perihelion from node	106	18	13·8	M. Eq. 1880·0
Ascending node	296	41	55·4	
Inclination	5	31	3·5	
Angle of eccentricity	42	31	39·7	
Log. semi-axis major	0·518438			

The corresponding period is 2189 days, or a little less than six years. The middle place is represented within the small errors of - 1″·2 in longitude and - 0″·6 in latitude.

PHYSICAL NOTES

MR. T. C. MENDENHALL of Japan has measured with a so-called "invariable pendulum" the acceleration of gravity at the top of the extinct volcano Fujiyama, which plays so prominent a part in the mythology and in the art of Japan. The value found for the summit of the mountain was $g = 9\cdot7886$, whereas at Tokio the value was found to be 9·7984. The average barometric pressure at the summit was 19·5 inches, the mountain itself being an almost perfectly symmetrical cone of vertical angle 138°, and of a height of 2·35 miles. It rises alone out of a plain of considerable extent, and appears to be composed of a uniform rock of porous nature. Tradition states that the mountain was thrown up in a single night in the year B.C. 286. The density of the rock in the lump was 1·75, but when reduced to powder the density was 2·5; competent geologists conclude the mean density of the mountain mass to be 2·12. Assuming the mountain to be a cone of semi-vertical angle of 69°, and density 2·12, Mr. Mendenhall calculated its attraction upon a particle